Reply to Office action of: January 18, 2006

AMENDMENTS TO THE CLAIMS

The following listing of claims will replace all prior versions, and listings, of

claims in the application:

Listing of Claims:

Claims 1 – 20 (Cancelled)

Claim 21 (Currently Amended) An apparatus for producing electromagnetic

radiation, the apparatus comprising

a superluminescent light-emitting diode, the superluminescent light emitting

diode comprising a semiconductor heterostructure forming a PN junction and

a waveguide defining an optical beam path,

the heterostructure including a gain region and an absorber region in series

with the gain region in the optical beam path,

a first contact for applying a voltage to the PN junction in its forward direction

in the in the gain region, so as to produce light emission from the gain region

and along the optical beam path,

and a second contact contacting the PN junction in the absorber region, the

second contact forming a permanent electrical contact between a P doped

side and an N doped side of the PN junction in the absorber region, so that

the PN junction in the absorber region is unbiased,

Page 2 of 7

the apparatus further comprising a housing carrying the superluminescent light-emitting diode, the housing comprising a symmetry axis, wherein said optical beam path is parallel to said symmetry axis,

wherein the housing comprises a disk-shaped body with two parallel facets, the symmetry axis being a symmetry axis of said body and being perpendicular to said facets, the housing further comprising electrical contacts penetrating the body in the direction of the symmetry axis, the superluminescent light emitting diode being provided in a semiconductor chip attached to a facet of said body.

Claim 22 (Previously Presented) The apparatus according to claim 21, wherein said second contact includes a wire contact between a layer having the electrical potential of the P side and a layer having the electrical potential of the N side.

Claim 23 (Previously Presented) The apparatus according to claim 21, wherein the PN junction comprises an n-doped side and a p-doped side, and wherein at least one of the n-doped side and the p-doped side is connected, by the second contact, to a metallic surface outside the heterostructure.

Claim 24 (Previously Presented) The apparatus according to claim 21, wherein the waveguide comprises two end facets, limiting the waveguide structure in a longitudinal direction parallel to the optical beam path, the end facets being perpendicular to the optical beam path.

Reply to Office action of: January 18, 2006

Claim 25 (Previously Presented) The apparatus according to claim 21, wherein the PN

junction in the gain region and in the absorber region is a bulk PN junction comprising a

p-doped component and an n-doped component, both having a layer thickness

exceeding 10 nm.

Claim 26 (Previously Presented) The apparatus according to claim 21, wherein the

semiconductor heterostructure in the gain region includes a multiple quantum well

(MQW) structure and wherein the PN junction is formed in said multiple quantum

well structure, or wherein the semiconductor heterostructure in the gain region

includes quantum wires or quantum dots.

Claim 27 (Previously Presented) The apparatus according to claim 21, wherein the

waveguide is index guided.

Claim 28 (Previously Presented) The apparatus according to claim 21, wherein the

waveguide is gain guided.

Claim 29 (Previously Presented) The apparatus according to claim 21, wherein the

semiconductor heterostructure comprises a first cladding layer and a second

cladding layer, the PN junction comprises a PN-junction layered structure between

the first and the second cladding layer, the PN-junction layered structure comprises

a single quantum well structure or a multiple quantum well structure or a bulk layer of

a p-doped material and a bulk layer of an n-doped material, the heterostructure

further comprises the first cladding layer being in electrical contact to a first metal

Page 4 of 7

Reply to Office action of: January 18, 2006

electrode, the second cladding layer being in electrical contact to a second metal

electrode, the first metal electrode or the second metal electrode or both metal

electrodes being interrupted between the gain region and the absorber region.

Claim 30 (Previously Presented) The apparatus according to claim 21, wherein

said housing is a TO-can.

Claim 31 (Previously Presented) The apparatus according to claim 21, wherein

superluminescent light-emitting diode is placed centrally in the housing and the

beam path coincides with the symmetry axis.

Claim 32 (Cancelled)

Claim 33 (Currently Amended) The apparatus according to claim 3221, wherein the

beam path is concentric with thea disc-shaped body.

Claim 34 (Previously Presented) The apparatus according to claim 21, further

comprising monitoring means for monitoring a photocurrent generated by radiation

emitted in the gain region and absorbed in the absorber region of the PN junction,

thereby producing a monitoring signal being a measure of the light emitted in the

gain region.

Page 5 of 7